

receiving material to be treated and a changeover portion. Incorporated within the changeover portion is a heat treatment chamber through which a stream or flow of hot gasses can be passed. The oven is pivotally moveable between a first position in which the changeover portion is higher than the charging portion and a second position in which the charging portion is higher than the changeover portion. The arrangement is such that the oven can be repeatedly moved between the first and second positions so that material within the oven falls from one portion to the other portion, passing through the stream of hot gasses in the heat treatment chamber. A method of using the apparatus is also disclosed.

The above known oven has the advantage that it can be used to treat comparatively low volumes of material in a batch process. A further advantage is that by controlling the movement of the oven, the material being treated can be brought into and out of the heat treatment chamber at will, enabling the oven to be operated safely without the process going autothermic in an uncontrolled manner and allowing a very fine degree of control of the treatment process.

The oven described in WO 01/98092 A1 has been found to work well, providing a commercially and technically acceptable means of thermally de-coating relatively low volumes of materials. However, when treating light weight materials, such as powders or materials that have been shredded into very small pieces, there can be a tendency for some of the material being treated to become entrained in the flow of hot gasses passing through the heat treatment chamber. Whilst some of the entrained material can be filtered out of the gas flow and recollected, there is an overall reduction in the efficiency of the process.

It is an object of the present invention is to provide an improved oven in which the problems of the known oven are overcome or at least reduced.

In accordance with the invention, there is provided an oven having a rotatable portion, the rotatable portion comprising an outer chamber and an inner treatment chamber located within the outer treatment chamber, the inner treatment chamber being adapted to receive

material for treatment and the oven further comprising means to heat the inner treatment chamber externally thereof.

5 It is an advantage of an oven in accordance with the invention, that the material treated in the inner treatment chamber can be heated indirectly by virtue of the external heating of the inner treatment chamber. A further advantage of an oven in accordance with the invention is that the walls of the inner treatment chamber are heated by the external heating means. When the material being treated enters the inner treatment chamber, some will come into contact with the hot walls, helping to heat the material and so reducing
10 processing times.

Preferably, the oven further comprises a charging portion for receiving material to be treated and a changeover portion;

15 the oven being moveable between a first position in which the changeover portion is generally higher than the charging portion and a second position in which the charging portion is generally higher than the changeover portion;

20 in which the inner and outer treatment chambers are provided in the changeover portion, the inner treatment chamber being adapted to receive material from the charging portion as the oven moves from the first position to the second position.

25 In a preferred embodiment, the external heating means comprises a flow of hot gasses through the outer treatment chamber and which passes over at least part of the external surface of the inner treatment chamber.

30 It is a particular advantage of the invention that the material being treated is separated from the flow of gasses through the outer chamber by the inner treatment chamber. As a result, the material does not become entrained in the flow of gasses through the outer chamber.

In a particularly preferred embodiment the oven further comprises an inlet means for

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Claims

1. An oven having a rotatable portion, the rotatable portion comprising an outer chamber and an inner treatment chamber within the outer chamber, the inner treatment chamber being adapted to receive material for treatment and the oven further comprising means to heat the inner treatment chamber externally thereof.
2. An oven as claimed in claim 1, the oven further comprising a charging portion for receiving material to be treated and a changeover portion;
the oven being moveable between a first position in which the changeover portion is generally higher than the charging portion and a second position in which the charging portion is generally higher than the changeover portion;
in which the inner and outer treatment chambers are provided in the changeover portion, the inner treatment chamber being adapted to receive material from the charging portion as the oven moves from the first position to the second position.
3. An oven as claimed in claim 1 or claim 2, in which means are provided for introducing a flow of hot gasses through the outer treatment chamber so that, in use, the gasses flow around at least part of the external surfaces of the inner treatment chamber to heat the inner treatment chamber externally.
4. An oven as claimed in any one of claim 1 to 3, further comprising means for introducing a flow of hot gases through the inner treatment chamber.
5. An oven as claimed in claim 4, in which the means for introducing a flow of hot gases comprises an array of inlet nozzles.

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6. An oven as claimed in claim 5, in which the array of nozzles are located adjacent a first side wall of the inner treatment chamber.
7. An oven as claimed in claim 6, in which the means for introducing a flow of hot gases through the inner treatment chamber further comprises an outlet vent through which the gasses can exit the inner treatment chamber.
8. An oven as claimed in claim 7, in which the outlet vent is located in a second side wall of the inner treatment chamber opposite from the first wall.
9. An oven as claimed in claim 6 or claim 7 when dependent on claim 2, in which the outlet vent is positioned such that, in use, as the oven moves between the first and second positions, the material passing between the charging box and the inner treatment chamber does not fall through the outlet vent.
10. An oven as claimed in any previous claim when dependent on claim 2, in which the oven is rotated in a first direction as it moves from the first position to the second position and is rotated in the opposite direction as it moves from the second position to the first position.
11. An oven as claimed in any one of claims 4 to 10, when dependent on claim 3, in which the oven further comprises a control means for regulating the flow and/or the oxygen content of gasses passing through the outer treatment chamber.
12. An oven as claimed in claim 11 when dependent on claim 4, in which the control means is also adapted to regulate the flow and/or oxygen level of the gasses flowing through the inner treatment chamber independently of the gases flowing through the outer treatment chamber.
13. An oven substantially as hereinbefore described with reference to and as

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illustrated in the accompanying drawings.